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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,814	12/08/2003	Masato Muraki	1232-5215	7582
27123	7590	03/01/2005	EXAMINER	
MORGAN & FINNEGAN, L.L.P. 3 WORLD FINANCIAL CENTER NEW YORK, NY 10281-2101			BERMAN, JACK I	
			ART UNIT	PAPER NUMBER
			2881	

DATE MAILED: 03/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/730,814

Applicant(s)

MURAKI ET AL.

Examiner

Jack I. Berman

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 9-14 is/are rejected.
- 7) ☒ Claim(s) 7, 8, 15 and 16 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4/2/2004</u> . | 6) <input type="checkbox"/> Other: ____ |

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Yahiro.

Yahiro discloses a charged-particle-beam exposure apparatus for exposing a substrate using a charged-particle-beam comprising:

a charged-particle source (1) for emitting a charged-particle beam;

a detecting unit (19) configured to detect intensity of that part of the charged-particle beam, which has been emitted from said charged-particle source, in an area (measurement area 11, which is provided in a silicon membrane (10) that is located on the reticle stage (9) but is not used to expose the substrate) not utilized in exposing the substrate; and

an adjusting unit configured to adjust intensity distribution of the charged-particle beam based upon result of detection by said detecting unit (not illustrated, but at lines 41-51 in column 3 and lines 31-36 in column 7, Yahiro teaches to adjust the intensity distribution of the charged-particle beam based upon the result of the detection by the detection unit and this adjustment inherently requires some means to perform this adjustment).

Nakasuji also discloses a method of controlling a charged-particle-beam exposure apparatus for exposing a substrate using a charged-particle beam, comprising:

a detecting step of detecting (see lines 5-50 in column 6), by a detector (19) provided for the purpose of detecting intensity of a charged-particle beam, intensity of that part of the

charged-particle beam which has been emitted from a charged-particle source (1), in an area (measurement aperture 11) not utilized in exposing the substrate; and

an adjusting step (see discussion above regarding the adjustment step performed by some type of adjusting unit) of adjusting intensity distribution of the charged-particle beam based upon result of detection at said detecting step.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2-6 and 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yahiro. While Yahiro teaches to adjust the illumination optical system to make the intensity distribution more uniform at lines 41-51 in column 3, the patent does not describe the details of how such an adjustment is to be made. However, since there are only a few components in the illumination optical system, the determination that adjustment of the collimator lens (7), whether or not is electrostatic, produces the desired adjustment of the beam intensity distribution would

have been a matter of routine experimentation. It would also have been obvious to a person having ordinary skill in the art to store a desired uniform intensity distribution as a reference value and to adjust the intensity distribution of the charged particles on the basis of the difference between the detected intensity distribution and the reference value so that the detected value becomes the reference value, either automatically or by measuring the intensity distribution and then separately making the adjustment. Such a technique is called a feedback loop and is well known in the art. It would also have been obvious to a person having ordinary skill in the art to apply this feedback only if the difference between the detected intensity distribution and the reference value exceeds an allowable value in order to minimize the amount of adjustment actually performed so the time for exposure of the substrate could be increased.

Claims 7, 8, 15, and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach to detect the intensity of the charged particle beam at a plurality of locations on a plate that are not the same as locations on the plate that have apertures or patterns that divide the charged-particle beam into a plurality of charged-particle beams that are used to expose the substrate.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Oae et al. teaches, in connection with the embodiment of the invention illustrated in Fig. 17, to measure the charged-particle-beam current at a plurality of locations on a plate (110)

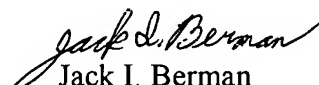
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having a plurality of apertures, but these apertures are the same apertures used to expose the substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack I. Berman whose telephone number is (571) 272-2468. The examiner can normally be reached on M-F (8:30-6:00) with every second Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571) 272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jack I. Berman
Primary Examiner
Art Unit 2881

jb
2/24/05